

AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double-bracketed text indicating deletions.

Listing of the Claims

1-50. (Canceled)

51. (New) A computer-readable medium having a data structure for managing reproduction of menu data, comprising:

a video data area storing one or more playback units of video data;

a menu data area storing a menu data file, the menu data file including a plurality of object units for recording thumbnail pictures, each thumbnail picture corresponding to one of the playback units, each thumbnail picture being recorded in one of the object units; and

a menu management area storing menu management information, the menu management information including information indicating an actual data size of each thumbnail picture, wherein,

if the actual data size of one of the thumbnail pictures is less than a size of the one of the object units in which the one of the thumbnail pictures is recorded, padding data is recorded in a remainder portion of the one of the object units, the remainder portion following the actual data of each thumbnail picture, and

the thumbnail pictures in the menu data file are reproduced based on the menu management information.

52. (New) The computer-readable medium of claim 51, wherein the menu management information includes a starting address and an ending address of each thumbnail picture to indicate the actual data size of each thumbnail picture.

53. (New) The computer-readable medium of claim 52, wherein a number of starting and ending address pairs indicates the number of the thumbnail pictures stored in the menu data file.

54. (New) A method of reproducing menu data recorded on a computer-readable medium, the method comprising:

reading menu management information, a menu data file, and one or more playback units of video data from the computer-readable medium, the menu data file including a plurality of object units for recording thumbnail pictures, each thumbnail picture corresponding to one of the playback units, each thumbnail picture being recorded in one of the object units, the menu management information including information indicating an actual data size of each thumbnail picture; and

reproducing at least one thumbnail picture in the menu data file based on the menu management information,

wherein if the actual data size of one of the thumbnail pictures is less than a size of the one of the object units in which the one of the thumbnail pictures is recorded, a remainder portion of the one of the object units is treated as padding data, the remainder portion following the actual data of each thumbnail picture.

55. (New) The method of claim 54, wherein the menu management information includes a starting address and an ending address of each thumbnail picture to indicate the actual data size of each thumbnail picture.

56. (New) The method of claim 55, wherein a number of starting and ending address pairs indicates the number of the thumbnail pictures stored in the menu data file.

57. (New) A reproduction apparatus, comprising:

a reproducing unit configured to read data recorded on a computer-readable recording medium; and

a controller configured to control the reproducing unit to read menu management information, a menu data file, and one or more playback units of video data from the computer-readable medium, the menu data file including a plurality of object units for recording thumbnail pictures, each thumbnail picture corresponding to one of the playback units, each thumbnail picture being recorded in one of the object units, the menu management information

including information indicating an actual data size of each thumbnail picture;
and

a decoder configured to decode at least one thumbnail picture in the menu data file based on the menu management information,

wherein if the actual data size of one of the thumbnail pictures is less than a size of the one of the object units in which the one of the thumbnail pictures is recorded, a remainder portion of the one of the object units is treated as padding data, the remainder portion following the actual data of each thumbnail picture.

58. (New) The apparatus of claim 57, wherein the controller controls the reproducing unit to read the menu management information including a starting address and an ending address of each thumbnail picture to indicate the actual data size of each thumbnail picture.

59. (New) The apparatus of claim 58, wherein a number of starting and ending address pairs indicates the number of the thumbnail pictures stored in the menu data file.

60. (New) A method of recording a data structure for managing reproduction of menu data on a computer-readable medium, the method comprising:

recording one or more playback units of video data in a video data area of the computer-readable medium,

recording a menu data file in a menu data area of the computer-readable medium, the menu data file including a plurality of object units for recording thumbnail pictures, each thumbnail picture corresponding to one of the playback units, each thumbnail picture being recorded in one of the object units; and

recording menu management information including information indicating an actual data size of each thumbnail picture,

wherein if the actual data size of one of the thumbnail pictures is less than a size of the one of the object units in which the one of the thumbnail pictures is recorded, a remainder portion of the one of the object units is recorded with padding data, the remainder portion following the actual data of each thumbnail picture.

61. (New) The method of claim 60, wherein the menu management information includes a starting address and an ending address of each thumbnail picture to indicate the actual data size of each thumbnail picture.

62. (New) The method of claim 61, wherein a number of starting and ending address pairs indicates the number of the thumbnail pictures stored in the menu data file.

63. (New) A recording apparatus, comprising:

a recording unit configured to record data on a computer-readable recording medium; and

a controller configured to control the recording unit to record one or more playback units of video data in a video data area of the computer-readable medium, the controller configured to record a menu data file in a menu data area of the computer-readable medium, the menu data file including a plurality of object units for recording thumbnail pictures, each thumbnail picture corresponding to one of the playback units, each thumbnail picture being recorded in one of the object units, and the controller configured to record menu management information including information indicating an actual data size of each thumbnail picture,

wherein if the actual data size of one of the thumbnail pictures is less than a size of the one of the object units in which the one of the thumbnail pictures is recorded, a remainder portion of the one of the object units is recorded with padding data, the remainder portion following the actual data of each thumbnail picture.

64. (New) The apparatus of claim 63, wherein the controller controls the recording unit to record the menu management information including a starting address and an ending address of each thumbnail picture to indicate the actual data size of each thumbnail picture.

65. (New) The apparatus of claim 64, wherein a number of starting and ending address pairs indicates the number of the thumbnail pictures stored in the menu data file.

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